

Appl. No. 10/069,809

Amendment Pursuant to 37 C.F.R. § 1.312

IN THE CLAIMS

1. (Previously Amended) A ceramic tile, which comprises:  
a ceramic core material having a surface;  
a tough low temperature cure coating (TLTC) infiltrating the surface, the TLTC comprising a cured ceramic powder combined with a binder; and  
an oxide ceramic matrix composite (CMC) covering the surface infiltrated with the TLTC, the oxide CMC comprising:  
a ceramic fiber; and  
a cured metal oxide ceramic material impregnating said ceramic fiber.
2. (Previously Canceled)
3. (Previously Amended) A ceramic tile according to claim 1, wherein said cured metal oxide ceramic material impregnating said ceramic fiber and said TLTC are co-cured.
4. (Previously Amended) A ceramic tile according to claim 1, wherein said ceramic core material has a coefficient of thermal expansion, and said TLTC raises said coefficient of thermal expansion of said ceramic core material.
5. (Previously Amended) A ceramic tile according to claim 1, wherein said ceramic powder comprises cordierite.
6. (Previously Amended) A ceramic tile according to claim 1, wherein said binder comprises silica sol.
7. (Previously Amended) A ceramic tile according to claim 1, wherein said TLTC infiltrates every surface of said ceramic core material, and said oxide CMC entirely surrounds said ceramic core material.

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8. (Previously Amended) A ceramic tile according to claim 1, wherein substantially none of said TLTC lies on said surface of said ceramic core material.
9. (Previously Amended) A ceramic tile according to claim 1, wherein said TLTC further comprises an emissivity-modifying agent that modifies the emissivity of a region of said ceramic core material surrounding said surface.
10. (Original) A ceramic tile according to claim 1, wherein said oxide CMC entirely surrounds said ceramic core material.
11. (Original) A ceramic tile according to claim 1, wherein said ceramic core material comprises a sintered mat of ceramic fibers.
12. (Original) A ceramic tile according to claim 10, wherein said ceramic fibers comprise silica fibers, aluminoborosilicate fibers, and alumina fibers.
13. (Currently Amended) A method of forming a ceramic tile, which comprises the steps of:
  - infiltrating a surface of ~~said~~ a ceramic core material with a tough low temperature cure coating (TLTC) comprising a cured ceramic powder combined with a binder; and
  - covering the TLTC-infiltrated surface of the ceramic core material with an oxide ceramic matrix composite (CMC), said oxide CMC comprising:
    - a ceramic fiber, and
    - a cured metal oxide ceramic material impregnating said ceramic fiber.
14. (Original) A method according to claim 13, which further comprises the step of:
  - pre-shrinking said ceramic fiber prior to impregnating said ceramic fiber with said metal oxide ceramic material.

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15. (Original) A method according to claim 14, wherein said pre-shrinking step comprises heating said ceramic fiber.
16. (Original) A method according to claim 15, wherein said ceramic fiber is heated to about 1800 °F during said pre-shrinking step.
17. (Previously Canceled)
18. (Previously Amended) A method according to claim 13, which further comprises the step of:  
co-curing said cured metal oxide ceramic material impregnating said ceramic fiber and said TLTC.
19. (Original) A method according to claim 18, wherein no curing process has been performed for either said cured metal oxide ceramic material impregnating said ceramic fiber or said TLTC prior to said co-curing step.
20. (Original) A method according to claim 18, wherein said co-curing step is performed using an autoclave between about 25 and about 100 psi.
21. (Original) A method according to claim 20, wherein said co-curing step is performed between about 50 and about 80 psi.
22. (Original) A method according to claim 20, wherein said co-curing step is performed at a temperature ranging between ambient temperature and about 500 °F.
23. (Previously Amended) A method according to claim 13, wherein said ceramic core material has a coefficient of thermal expansion, and said TLTC raises said coefficient of thermal expansion of said ceramic core material.

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24. (Previously Amended) A method according to claim 13, wherein said ceramic powder comprises cordierite.
25. (Previously Amended) A method according to claim 13, wherein said binder comprises silica sol.
26. (Previously Amended) A method according to claim 13, wherein said infiltrating step comprises infiltrating every surface of said ceramic core material, and said covering step comprises entirely surrounding said ceramic core material.
27. (Previously Amended) A method according to claim 13, wherein upon completion of said infiltrating step substantially none of said TLTC lies on said surface of said ceramic core material.
28. (Previously Amended) A method according to claim 13, wherein said TLTC further comprises an emissivity-modifying agent that modifies the emissivity of a region of said ceramic core material surrounding said surface.
29. (Original) A method according to claim 13, wherein said covering step comprises entirely surrounding said ceramic core material.
30. (Original) A method according to claim 13, wherein said ceramic core material comprises a sintered mat of ceramic fibers.
31. (Original) A method according to claim 30, wherein said ceramic fibers comprise silica fibers, aluminoborosilicate fibers, and alumina fibers.
32. (Currently Amended) A ceramic tile produced by a method which comprises the steps of:

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infiltrating a surface of ~~said~~ a ceramic core material with a tough low temperature cure coating (TLTC) comprising a cured ceramic powder combined with a binder; and  
covering the TLTC-infiltrated surface of the ceramic core material with an oxide ceramic matrix composite (CMC), said oxide CMC comprising:  
a ceramic fiber, and  
a cured metal oxide ceramic material impregnating said ceramic fiber.

33. (Previously Canceled)

34. (Original) A ceramic tile according to claim 32, wherein said method further comprises the step of:  
co-curing said cured metal oxide ceramic material impregnating said ceramic fiber and said TLTC.

35. (Original) A ceramic tile according to claim 32, wherein said method further comprises the step of:  
pre-shrinking said ceramic fiber prior to impregnating said ceramic fiber with said metal oxide ceramic material.

36. (Original) A ceramic tile according to claim 35, wherein said pre-shrinking step comprises heating said ceramic fiber.

37. (Original) A method according to claim 36, wherein said ceramic fiber is heated to about 1800 °F during said pre-shrinking step.